CLAIM AMENDMENTS

1 (Currently Amended) An optical modulator comprising:

a semi-insulating semiconductor substrate with a principal plane ~~including a partially exposed surface~~;

an optical waveguide ridge ~~which is~~ disposed on the principal plane of said semiconductor substrate and ~~which includes~~ including a first cladding layer of a first conductivity type, an optical-absorption layer, and a second cladding layer of a second conductivity type, sequentially stacked on said semiconductor substrate, said optical waveguide ridge ~~further having~~ including a planar first side ~~with a flat portion~~ extending ~~uniformly~~ from a top of ~~the~~ said optical waveguide ridge to and contacting the principal plane of said semiconductor substrate, the first cladding layer having an extension protruding from said ~~the flat portion being in contact with the exposed surface~~ optical waveguide ridge and covering a part of the principal plane of said semiconductor substrate;

a dielectric film ~~which covers~~ covering said optical waveguide ridge, the extension of the first cladding layer, and the principal plane of said semiconductor substrate ~~and which has~~ not covered by the first cladding layer, said dielectric film having a first opening at the top of said optical waveguide ridge and a second opening opposite a region of the extension of the first cladding layer on a second side of said ~~semiconductor substrate other than the exposed surface~~ optical waveguide ridge, opposite the first side of said optical waveguide ridge;

a first electrode disposed on said dielectric film and ~~mounted~~ extending through the first opening on the top of said optical waveguide ridge ~~said first electrode further~~ and making electric contact with said optical waveguide ridge, extending on the ~~flat portion~~ first side of said optical waveguide ridge in contact with a surface of said dielectric film, ~~said first electrode further having~~ and including a bonding pad on said dielectric film directly opposite the principal plane of said semiconductor substrate at the ~~exposed surface~~ first side of said optical waveguide ridge; and

a second electrode ~~disposed on said semiconductor substrate and connected to~~ making electrical contact with the first cladding layer through the second opening in said dielectric film.

2. (Currently Amended) The optical modulator according to claim 1, wherein ~~said semiconductor substrate has exposed surfaces on both sides of said optical waveguide ridge, wherein~~ said optical waveguide ridge ~~has the flat portion~~ is planar on ~~both sides and wherein~~ the second side, said first electrode extends ~~over~~ on said dielectric film on both the first and second sides of said optical waveguide ridge, ~~two ends of~~ and said first electrode ~~being~~

includes an end disposed ~~respectively~~ on said dielectric film opposite the ~~exposed~~ principal surface of said semiconductor substrate at the second side of said optical waveguide ridge.

3. (Currently Amended) The optical modulator according to claim 1, wherein the extension of the first cladding layer ~~has an extension that~~ extends from a part of the first side and from a second side of said optical waveguide ridge onto ~~a region~~ the principal plane of said semiconductor substrate ~~located outside said optical waveguide ridge and excluding the region where said first electrode is disposed~~.

4. (Currently Amended) The optical modulator according to claim 2, wherein the extension of the first cladding layer ~~has an extension that~~ extends from a part of the first side and from a second side of said optical waveguide ridge onto ~~a region~~ the principal plane of said semiconductor substrate ~~located outside said optical waveguide ridge and excluding the region where said first electrode is disposed~~.

5 and 6 (Cancelled)

7. (Currently Amended) The optical modulator according to claim 1, further comprising a dielectric layer located between said dielectric film and said first electrode and at a base of said optical waveguide ridge, including a region where the ~~flat portion~~ planar first side of ~~the~~ said optical waveguide ridge is in contact with the ~~exposed surface~~ principal plane of said semiconductor substrate.

8. (Currently Amended) The optical modulator according to claim 2, further comprising a dielectric layer located between said dielectric film and said first electrode and at a base of said optical waveguide ridge, including a region where the ~~flat portion~~ planar first side of ~~the~~ said optical waveguide ridge is in contact with the ~~exposed surface~~ principal plane of said semiconductor substrate.

9. (Currently Amended) The optical modulator according to claim 3, further comprising a dielectric layer located between said dielectric film and said first electrode and at a base of said optical waveguide ridge, including a region where the ~~flat portion~~ planar first side of ~~the~~ said optical waveguide ridge is in contact with the ~~exposed surface~~ principal plane of said semiconductor substrate.

10 (Currently Amended) The optical modulator according to claim 4, further comprising a dielectric layer located between said dielectric film and said first electrode and at a base of said optical waveguide ridge, including a region where the ~~flat portion~~ planar first side of ~~the~~ said optical waveguide ridge is in contact with the ~~exposed surface~~ principal plane of said semiconductor substrate.

11. (Currently Amended) ~~The~~ An optical modulator ~~according to claim 1, further~~ comprising:

a semi-insulating semiconductor substrate with a principal plane, said semiconductor substrate including an electrically conductive ~~layer~~ region of ~~said~~ a first conductivity type ~~disposed over~~ exposed at a part of the principal plane of said semiconductor substrate ~~including a region under said~~;

an optical waveguide ridge ~~and excluding the region where said first electrode is located~~ disposed on the principal plane of said semiconductor substrate and on the electrically conductive region of said semiconductor substrate, said optical waveguide ridge including a first cladding layer of the first conductivity type in contact with the electrically conductive region, an optical-absorption layer, and a second cladding layer of a second conductivity type, sequentially stacked on said semiconductor substrate, said optical waveguide ridge having a planar first side extending from a top of said optical waveguide ridge to and in contact with the principal plane of said semiconductor substrate;

a dielectric film covering said optical waveguide ridge and the principal plane of said semiconductor substrate, including a first opening at the top of said optical waveguide ridge and a second opening directly opposite a portion of the principal plane of said semiconductor substrate including said electrically conductive region;

a first electrode disposed on said dielectric film, extending through the first opening on the top of said optical waveguide ridge and making electrical contact with said optical waveguide ridge, extending on the first side of said optical waveguide ridge in contact with said dielectric film, and including a bonding pad on said dielectric film directly opposite the principal plane of said semiconductor substrate at the first side of said optical waveguide ridge; and

a second electrode ~~being disposed on~~ making electrical contact with said ~~semiconductor layer~~ electrically conductive region through the second opening in said dielectric film.

12. (Currently Amended) ~~An~~ The optical modulator according to claim 1, further comprising a high-resistance semiconductor layer located between ~~one~~ the first side of said optical waveguide ridge and said dielectric film, said high-resistance semiconductor layer being thinner than said optical waveguide ridge.

13. (Currently Amended) ~~An~~ The optical modulator according to claim 2, further comprising a high-resistance semiconductor layer located between ~~one~~ the first side of said optical waveguide ridge and said dielectric film, said high-resistance semiconductor layer being thinner than said optical waveguide ridge.

14. (Currently Amended) ~~An~~ The optical modulator according to claim 3, further comprising a high-resistance semiconductor layer located between ~~one~~ the first side of said optical waveguide ridge and said dielectric film, said high-resistance semiconductor layer being thinner than said optical waveguide ridge.

15. (Currently Amended) ~~An~~ The optical modulator according to claim 4, further comprising a high-resistance semiconductor layer located between ~~one~~ the first side of said optical waveguide ridge and said dielectric film, said high-resistance semiconductor layer being thinner than said optical waveguide ridge.

16. (Currently Amended) A photonic semiconductor device comprising:

an optical modulator having:

a semi-insulating semiconductor substrate with a principal plane ~~including a partially exposed surface~~;

an optical waveguide ridge ~~which is~~ disposed on the principal plane of said semiconductor substrate and ~~which includes~~ including a first cladding layer of a first conductivity type, an optical-absorption layer, and a second cladding layer of a second conductivity type, sequentially stacked on said semiconductor substrate, said optical waveguide ridge ~~further having~~ including a planar first side ~~with a flat portion~~ extending ~~uniformly~~ from a top of ~~the~~ said optical waveguide ridge to and contacting the principal plane of said semiconductor substrate, the first cladding layer having an extension protruding from said ~~the flat portion being in contact with the exposed surface~~ optical waveguide ridge and covering a part of the principal plane of said semiconductor substrate;

a dielectric film ~~which covers~~ covering said optical waveguide ridge, the extension of the first cladding layer, and the principal plane of said semiconductor substrate

~~and which has~~ not covered by the first cladding layer, said dielectric film having a first opening at the top of said optical waveguide ridge and a second opening opposite a region of the extension of the first cladding layer on a second side of said ~~semiconductor substrate other than the exposed surface~~ optical waveguide ridge, opposite the first side of said optical waveguide ridge;

a first electrode disposed on said dielectric film and ~~mounted~~ extending through the first opening on the top of said optical waveguide ridge ~~said first electrode further~~ and making electric contact with said optical waveguide ridge, extending on the ~~flat portion~~ first side of said optical waveguide ridge in contact with a surface of said dielectric film, ~~said first electrode further having~~ and including a bonding pad on said dielectric film directly opposite the principal plane of said semiconductor substrate at the ~~exposed surface~~ first side of said optical waveguide ridge; and

a second electrode ~~disposed on said semiconductor substrate and connected to~~ making electrical contact with the first cladding layer through the second opening in said dielectric film; and

a semiconductor laser device aligned in optical axis with the optical absorption layer of said optical modulator.

17. (Currently Amended) The photonic semiconductor device according to claim 16, wherein said semiconductor laser device is a ridge type device having an optical waveguide ridge disposed on a semi-insulating semiconductor substrate, said semiconductor laser device and said optical modulator being mounted on said semiconductor substrate.

18-20 (Cancelled)